

W5YI

America's Oldest Ham Radio Newsletter

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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Canada Proposes 5 wpm Morse Exam for its Amateur Service

Canada's telecommunications regulatory agency, *Industry Canada* has proposed to amend Radio Information Circular RIC-2 to "Grant Full Operating Privileges in all Amateur Radio Frequency Bands Below 30 MHz to Amateur Radio Operators Holding a 5 word per minute (w.p.m.) Morse Code Qualification." RIC's contain Canada's Amateur Radio Service regulations, similar to our Part 97.

Up until April 1, 2000, Canadian amateur radio operators were issued two separate authorizations; an Amateur Radio Operator Certificate and a radio station license. The Amateur Radio Operator Certificate was issued for life with no fee associated with it, while the radio station licence was issued on a yearly basis and a license renewal fee was charged.

On April 1st, Industry Canada combined these documents into one authorization, the Amateur Radio Operator Certificate which does not need to be renewed annually. The current Amateur Radio Operator Certificate has four qualification levels: Basic (allows 250 watt "no code" operation above 30 MHz), Morse code (5 w.p.m. – additionally allows 160, 80 and 10 meter operation), Morse code (12 w.p.m. – additionally allows operation on all bands below 30 MHz) and Advanced Qualifications (additionally allows 1 KW operation and the right to build transmitting equipment and to establish repeaters, remotely controlled and club stations.)

While there is no charge for Canada's lifetime Amateur Radio Certificate, a fee of \$60.00 (Cana-

dian) is charged for club, user selected ("Vanity"), additional, special prefix and special event station call signs.

The long-awaited Gazette Notice was published on January 6, 2001. Its purpose is to give all Canadians an opportunity to comment on the proposed changes. Comments close in 60 days. The text of the Gazette Notice reads:

RADIOCOMMUNICATION ACT

Amendments to the Technical Requirements set out in the Radiocommunication Information Circular 2 (RIC-2), "Standards for the Operation of Radio Stations in the Amateur Radio Service"

Notice No. DGRB-001-01 – A Proposal to Grant Full Operating Privileges in all Amateur Radio Frequency Bands Below 30 MHz to Amateur Radio Operators Holding a 5 word per minute (w.p.m.) Morse Code Qualification

Introduction

In accordance with the Radiocommunication Regulations, made pursuant to the Radiocommunication Act, the Amateur Radio Service is "... a radiocommunication service in which radio apparatus are used for the purpose of self-training, intercommunication or technical investigation by individuals who are interested in radio technique solely with a personal aim and without pecuniary interest."

Amateur radio operators enjoy communicating domestically and worldwide with other amateur radio operators. They experiment with various radio modulation techniques ranging from elementary modes involving the

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on-off transmission of continuous wave (CW) radio emissions using the International Morse code, to more complex emissions such as slow scan television and packet radio communication techniques. The amateur radio service is, by virtue of the potential for global propagation of amateur signals in high frequency (HF) bands, an international service, and it is governed internationally by regulations of the International Telecommunication Union (ITU), of which Canada is a signatory nation. ITU regulations require that all amateur radio operators be familiar with the International Morse code in order to use frequencies below 30 MHz.

Industry Canada has recently received a number of petitions from individuals who contend that the current regulatory requirement for maintaining an operator proficiency in the transmission and reception of Morse code at a speed of 12 words per minute can no longer be justified. Their view is that CW is an outdated modulation technique and that proficiency in the Morse code should no longer be the basis upon which amateurs are granted enhanced operating privileges. Many have also questioned the logic of maintaining a regulatory regime whereby operator proficiency in the Morse code is the standard applied in order to grant Canadian amateurs enhanced operating privileges in telephony.

Over the years, officials of the Department have worked with amateur radio operators and their organizations to foster the development of the service. As part of this effort, the Department consults with the amateur community through regular meetings with *Radio Amateurs of Canada Inc.* (RAC), the national association representing Canadian amateurs. The issue of the Morse code requirement was brought forward by RAC during the April 27, 2000 meeting of the *Canadian Amateur Radio Advisory Board*. A formal proposal to eliminate the 12 w.p.m. Morse code requirement in order to grant amateurs full HF operating privileges on frequencies below 30 MHz was received by Industry Canada in a letter from RAC dated June 15th, 2000.

In that letter, the RAC noted that:

"this proposal would give Canadian radio amateurs operating privileges similar to those currently accorded to United States amateurs who successfully pass a 5 w.p.m. Morse test". RAC also emphasized the "ongoing debate in the amateur radio community concerning the validity of the retention of the international radio regulations" requirement for Morse Code competency for operation below 30 MHz., given the (recent) removal of Morse for international maritime communications and its declining use by government and military organizations. A number of administrations have proposed that a review of the international regulations governing the Amateur Services be placed on the agenda of the World Radio Conference

scheduled for 2003. The Proposed review is supported by the International Amateur Radio Union, which has consulted with its member organizations in over 180 countries during the past four years."

The letter also pointed out that *"RAC has consulted with the Canadian Amateur Community in various ways including web site surveys, message boards, analysis of e-mail and postal correspondence and letters to the editor of The Canadian Amateur magazine, as well as on-the-air discussions and fora. It is evident that a majority of Canadian Amateurs are supportive of dropping the 12 W.P.M. test."*

Apart from the international trend to amend the ITU Radio Regulations, many European countries including the United Kingdom, as well as the United States, Australia and South Africa, have decided to decrease their Morse code proficiency requirements or are currently considering such action. A decision by Canada to reduce the 12 w.p.m. Morse code qualification would be consistent with what is happening in other parts of the world and would therefore simplify the process of implementing reciprocal operating agreements for Canadian amateurs with other administrations.

Proposal

In light of the foregoing, Industry Canada proposes that Radio Information Circular 2 (RIC-2), *Standards for the Operation of Radio Stations in the Amateur Radio Service* be amended to remove the requirement that amateur radio operators hold the 12 w.p.m. Morse code qualification to operate an amateur radio station on frequencies below 30 MHz. It is also proposed that RIC-2 be amended so that full operating privileges in all amateur bands will be granted to amateur radio operators holding the basic and 5 w.p.m. morse code qualification.

Industry Canada invites comments, preferably in electronic format, from all interested parties. Submissions should be addressed to the Chief, Authorization, at the following Internet address: dospaa@ic.gc.ca

Submissions can also be sent by mail to the Chief, Authorization, Spectrum Management Operations Directorate, Room 1588D, 300 Slater Street, Ottawa, Ontario, K1A 0C8. To ensure consideration of comments, submissions must be received within 60 days of the date of publication of this Notice. All submissions should cite the Canada Gazette Part 1 Notice publication date, title and the Notice reference number.

All submissions received in response to this Notice will be made available for public viewing on Industry Canada's web site at: <http://strategis.ic.gc.ca/spectrum>.

/signed/ Jan Skora, Director General, Radiocommunication and Broadcasting Regulatory Branch, Industry Canada, January 6, 2001

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CLUB STATION CALL SIGN ADMINISTRATORS (CSCSA)

On January 5, 2001 the FCC announced that it had appointed three volunteer organizations to process applications for Amateur Radio Service club, Military Recreation, and Radio Amateur Civil Emergency Service (RACES) station licenses. These licenses and station call signs are issued to the trustees and custodians of these groups. The Commission had originally proposed to use volunteer Club Station Call Sign Administrators (CSCSA) in an Order issued October 21, 1998.

Each CSCSA has non-profit tax-exempt status under Section 501(c)(3) of the *Internal Revenue Code of 1986* and has agreed to provide application processing services at no cost. These organizations are now testing their software and will begin processing club, military recreation and RACES applications shortly.

All applications must be submitted to the FCC in an electronic batch file similar to that being used by the VECs for all other new, upgraded, renewed and modified Amateur Radio licenses. The FCC said that CSCSAs may collect all necessary information in any manner of its choosing, including creating its own forms.

The form that will be used is the NVEC Form 605 (Feb. 2001 version) which is available without cost from the newly appointed CCSAs (or any VEC or VE.) This is the same application form that is used by all VECs and VE teams in the examination process. It contains additional blocks to denote the type of application (Individual, Club, Military Recreation or RACES) and the name of their club, club station callsign (if any) and responsible official.

While the FCC permits club and military recreation organizations to file new, renewed and modified applications, effective April 15, 2000 RACES station licenses may only be modified (such as the appointment of a new custodian or address change) since the FCC is in the process of phasing them out.

Beginning January 22, 2001, the FCC will accept club, "mil rec" and RACES applications only from an approved CSCSA. The FCC Form 610-B will no longer be used and may not be submitted. To obtain a new, renewed or modified ham club or military recreation station license, or to modify an existing RACES station license, you must file your application document with one of the following Club Station Call Sign Administrators:

American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111. - Contact: Wayne Irwin (860) 594-0200; <www.arrrl.org>; e-mail: clubcalls@arrrl.org.

W4VEC Volunteer Examiners Club of America, 3504 Stonehurst Place, High Point, NC 27265. Contact: Jim Williamson (336) 841-7576; <www.w4vec.com>; e-mail: w4vec@aol.com.

W5YI-VEC, Inc., P.O. Box 565101, Dallas, TX 75356-5101. Contact: Larry Pollock (817) 274-0400 or (817) 461-6443; <www.w5yi.org>; e-mail: NB5X@w5yi.org.

PROBLEMS DEVELOP WITH PHASE-3D HAM SATELLITE

The excitement of successfully orbiting the largest amateur satellite is slowly turning to one of apprehension. Following a one day postponement, the November 16th launch of the Phase 3D Hamsat - now called AMSAT Oscar 40 - went off like clockwork with no problems. It was ejected into a geostationary transfer orbit from the Ariane 5 launcher -- to be later prodded into its final high elliptical orbit. Its beacons began transmitting almost immediately. The original plan was to turn the satellite over to general amateur use during mid-2001. It is called AO-40 because it has been 40 years since Oscar-1 was launched.

Phase 3-D is primarily a project of AMSAT-DL (Germany) and Karl Meinzer, DJ4ZC, who heads up the effort initially said the satellite was in good shape. There was even plans to allow limited operation sooner than planned while the satellite was being maneuvered and tested.

Then something happened. On December 13, communications was lost with AO-40 and the hamsat went silent. It wasn't until Christmas day that controllers were able to reset the main computer - which has been operating erratically - to get the satellite transmitting again.

Ground controllers are now analyzing the telemetry sent back on the 13-cm beacon in an effort to determine just what went wrong aboard AO-40. The command team wants to find out if there are any risks involved in attempting to restart onboard systems.

So far, the 2-meter beacon transmitter has remained off the air. There are also problems with the 70-centimeter transmitter and it is believed that this difficulty developed shortly after launch.

Still, Dr. Karl Meinzer, DJ4ZC remains optimistic. He believes "...the command-and engineering team stand a good chance of turning AO-40 into an extremely useful Amateur Radio satellite." He does admit, however, that the craft is damaged, "...we have lost some systems in AO-40..." he said.

AMSAT-NA President Robin Haighton, VE3FRH, is in the process of establishing an Inquiry Committee which will conduct a fact finding investigation into the incident which resulted in the 12-day loss of communication "...to make sure that a similar situation cannot happen again either on AO-40 or on a future satellite."

Word from NORAD - the *North American Aerospace Defense Command* - was somewhat encouraging. They said the satellite was intact and in a proper orbit. But the latest word is that it may be leaking, causing it to spin out of control. Everyone is waiting ...and hoping for the best.

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CUTTING EDGE TECHNOLOGY

Last year was the worst year ever for technology investing. And with it, the number of high-tech billionaires shrunk in 2000. Among the best known technology CEO's - only Oracle's Larry Ellison added substantial net worth. (Up \$3.8 billion.) He is now worth \$53 billion and has overtaken Bill Gates (with "only" \$52 billion) as the world's richest man. Besides Microsoft's Bill Gates, big losers include Steven Ballmer (Microsoft) down \$16.8 billion, Michael Dell (Dell Computer) -\$10.3 billion, Jeff Bezo (Amazon.com) -\$6.9 billion, Robert Glaser (Real Networks) -\$2.7 billion and David S. Wetherell (CMGI) -\$2.1 billion.

Electro-plate with a pen. With Hunter Products' disposable, felt-tip electro-plating marker pen, you can create your own metallic surface on a specified object. Connect a low-voltage DC power supply to make the conductive properties permanent.

Timing is everything. One of the many unforeseen obstacles in designing high-density integrated circuits is timing delay. Often, an engineer can't determine beforehand precisely how much delay a particular signal will encounter while traveling through a chip. Just the tiny wires connecting interior regions of the chip together can add significant delays. The more complex the chip, the longer the time lag. Correcting for these delays can slow down overall chip development by as much as 50%. Combining digital and analog circuitry together slows things down even more.

Have you been exposed to too much ozone? In potentially hazardous situations, ozone can build up to unhealthy levels. Just like radiation badges, an ozone badge clipped onto clothing can record a specified dose of ozone exposure. Vistanomics is one company that makes ozone-badge readers. Results can be collected for an entire factory staff, uploaded into a computer, and examined for better safety.

Using X-rays to search for metals. Soil can be examined with X-rays to check for contamination. A portable type of X-ray machine bombards a sample with X-rays of a known frequency, at a very minuscule dose. Particular elements absorb and re-emit these X-rays at a differ-

ent, particular frequency. The X-ray detector picks up these readings and instantly displays what types of contaminants are therefore detected. This technique works for examining contaminated water, dirt and paint.

Digitizing a landscape. A company called 3rdTech, Inc. has created a special scanner that electronically scans and records the three-dimensional shapes of large objects from a distance. The portable DeltaSphere-3000 laser scanner includes a range finder, a computer, and a tripod to produce a detailed, accurate, three-dimensional cloud of data points (up to 50 million) in all directions. Within 30 minutes, it can record all objects up to 40 feet away.

Georadars help locate underground faults. Civil engineers are using georadar, an earth-probing RF technology, to locate problems with pipelines and erosion. Archaeologists use it to look for potential digs because it can reveal buried objects from the surface.

Problems with optical test equipment. Fiber-optic cables can develop faults, ranging from complete breaks to intermittent cracks. Just like sticking a pin into copper coax cable, a crack in an optic cable creates "standing waves" in light-based telecommunications. An optical time-domain reflectometer (OTDR) can usually find such faults, but not always; it has "dead spots," or blind areas close to such reflective faults. This is when visual fault locators work better. They rely on inserting a beam of visible light and looking by eye for the fault.

Be cautious when driving with infra-red radar systems. They're quite useful while driving at night, allowing drivers to see objects based on heat rather than reflected light. Unless an animal is looking into the headlights, it may be totally invisible on a dark road without a heads-up infra-red (IR) display. But there's an inherent problem: IR doesn't work well when it's raining. Water absorbs heat, and therefore makes most objects cooler and less visible in infra-red.

Remote-control for cars and trucks. Sigtec makes a device that creates an RF link between vehicles in the field and a home base. Commanders can remotely track a particular car's location through GPS data, and also note certain inputs -- such as car doors closed, siren on, the condition of the engine, and even a personal alarm sent by the driver. In re-

turn, the "mobiTAG" system can respond to external commands from home base; imagine someone stealing a car and then finding the engine shutting itself off and all the doors locking by themselves!

Why bother patenting something you never intend to use? Strange as it may seem, electronics companies (as an example) may patent a new invention but never use it in a product or license it to anyone else. There is nothing illegal about this. Companies may take this approach as a matter of economics, to prevent competitors from installing or using the new technology in their products for a set amount of time.

Trains tracked by satellite. Almost 3,000 locomotives are being outfitted with digital tracking systems to let controllers know where they are at all times, to within 100 meters. A satellite network helps cover the U.S., and parameters such as fuel levels can be uplinked in real time.

Atomic clocks in the stock market? Securities dealers require stock-trading firms to time-stamp each and every transaction. Each time notation must not only be correct, but it must also be traceable to the atomic clocks at the National Institute of Standards and Technology. The same clock that drives time-keeping radio station WWV also drives the economy!

ASICs are getting denser. Application-specific integrated circuits (ASIC's) can pack thousands of tiny transistors into a small space. Today's average is 1 million logic gates per square inch inside an ASIC.

Time-sensitive vending machines. The latest generation of candy and soda machines contain microcontrollers with internal, real-time clocks. What good is that? Custom applications can be programmed into certain vending machines, such as in schools. Some items can be bought at any time, while certain other items can be purchased only during lunch periods. Milk and juice, for instance, can be available at any time of day, but anyone trying to buy soda for breakfast will be directed to make another selection.

Digital measuring tape. The L. S. Starrett Company's DigiTape Plus looks like any other measuring tape (commonly found in repair shops and construction sites), but it includes an LCD to show precise recorded lengths up to 25 feet. Lefties can push a button to "flip"

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the display readout so they won't have to read the numbers upside-down. Measurements can be displayed in decimals, and up to three readings can be stored internally.

Dirty air ionizers now easier to keep clean. Air ionizers are used to remove electrostatic charges from ambient air, which helps prevent sensitive electronic devices from being damaged. High-voltage generators used in air ionizers collect dust, however, and keeping these sharp areas clean can be a constant battle. Desco's removable emitter cassettes let users slide out dirty filters and slide in clean ones at a moment's notice. Dirt particles won't float throughout a clean room and manufacturing equipment doesn't have to be shut down.

More renewable electricity sources appearing. Texas has a law requiring at least 1.5% of the state's electricity be generated by renewable energy sources by the year 2009. To that end, the world's largest wind-powered electrical source is being built on King Mountain. When it comes on line in 2001, its 160 wind-driven turbines will generate as much as 200 megawatts of power.

Cockpit video recorders on the way? Pilots and flight crews want no part of video cameras in airplane cockpits; they view it as yet another invasion of privacy. But air safety advocates say that the idea is to keep air travel safe. They maintain that cockpit voice and data recorders continue to grow in capabilities but still do not always provide crash investigators with the information they need to pinpoint a cause. Video cameras in the cockpit can reveal how certain controls were set and what visual information was presented to the pilots during the crash on the video screens (radar and control data).

ESD (electro-static discharge) safety for walk-up workbench visitors.

Engineers and technicians who work with static-sensitive electronic circuitry often wear grounded wrist straps to bleed off any accumulated electrical charge that could damage semiconductors. But what if they get up and walk around? Heel grounding straps may not always work. Some of the newest ESD workbenches include extra receptacles for plugging in wrist-strap cables for more than one person at a time. Roll-around work carts can also be grounded this way.

How tight is that nut? Find out for sure with StressTel's BoltMike. It's a

device that uses ultrasonic waves to measure the tiny change of length in a bolt due to its load and stress. A tightened bolt has a different internal sound velocity than a loose bolt. BoltMike can keep track of several sets of bolts, store that data internally, and print out the results.

EMERGING COMMUNICATIONS

A research report by the **Yankee Group** says that **DBS (Direct Broadcast Satellite) subscribers will grow from 15 to 25 million by 2005.** The increase will be driven by the addition of local channels and new features. These new services include high-speed Internet access, satellite receivers equipped with digital video recorders (DVRs) and interactive TV.

The report, entitled "*Direct Broadcast Satellite: Growth in New Directions*," said DBS's appeal historically had been the strongest in rural areas (without access to cable TV) ...and among viewers who wanted more channels and improved picture and sound quality.

The *Satellite Home Viewer Improvement Act* now permits satellite companies to provide local broadcast TV signals. As a result, DBS now competes more effectively with cable in all markets.

The average cost of a DBS system (including installation) has declined 50 percent within the past two years to \$150 while the monthly subscription fee has remained about the same: \$40.

Large dish (C-Band) satellite subscribers continue to dwindle. There are now less than 1.2 backyard big dish owners. ...down 25 percent in the past year alone.

Japan's Management and Coordination Agency says **59% of Japanese high-school juniors - 68% of girls and 50% of boys - have their own mobile phones, and two-thirds of those who don't own one want one.** At the end of 1999, more than 60% of Japanese youth older than 16 owned a handset, and they spent about \$59 per month for service, with some running up bills as high as \$175.

Boys make six calls per day, while girls make five, but most use the devices for e-mail. On the down side, 68% of teen-aged users surveyed said they made poor grades in school. (Reported by InternetNews.)

According to a new report from DataComm Research, **the current crop**

of consolidations and mergers in the telecom industry is analogous to a "circling of the wagons" by the carriers. There is only room in the market for a few national carriers as well as a few regional carriers, meaning that the remaining carriers must evolve specialized services

These specialized services, the report says, will give rise to what the report calls "smart pipes," namely intelligent bit pipes that form the basis of next-gen telecom networks. "Firms in Flux: Creating Successful Telecom Combinations & Spin-offs" says telecom players must make "brilliant use" of combinations and spinoffs if they are to move up the value chain.

(Reported by Newsbytes)

The *London Sunday Times* (Jan. 14, 2001) reports that **scientists have linked eye cancer to mobile phones for the first time.** The study said there is a threefold increase in eye cancers among people who regularly use the devices. The research, published in the journal *Epidemiology*, was carried out by a team from the University of Essen, in Germany. It investigated a form of eye cancer called uveal melanoma, in which tumors form in the layer that makes up the iris and base of the retina. The mechanism by which the radiation might cause cancer is uncertain but it is known that the watery contents of the eye assists the absorption of radiation.

Some **172 television stations are transmitting ultra-sharp digital HDTV (high definition) signals,** but few people (less than 1 percent) are receiving them. Of the nearly 100 million TV households, only 750,000 have a HDTV set. The FCC is now considering whether to require that all new analog TV receivers contain digital tuners. The Commission sees this as a way to increase widespread adoption of digital TV.

But broadcasters are in no hurry - they have until 2006 before they have to return their analog channels for spectrum reallocation (auctioning) and only if 85% of U.S. households have digital sets by then. Many experts believe that threshold will not be reached without an FCC mandate. The Consumer Electronics Association opposes forcing TV makers to include digital tuners because it would unnecessarily add to the cost of an analog TV set.

Phosphor damage on HDTV receivers? One problem starting to show up on commercial high-definition TV sets is a peculiar form of "phosphor burn," a

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shadow permanently etched into the cathode-ray tube. You can often see this today in old computer monitors and arcade game screens. The problem with HDTV sets is showing a picture that normally doesn't take up the entire height and width of the screen. Black bars above and below the visible picture are often visible when the aspect ratio isn't correct. If left in place long enough, this can lead to uneven "wear" of the phosphors on the inside face of the picture tube. HDTV set manufacturers won't cover the cost of replacing the tube under warranty, either. It's best to adjust the TV to use the entire screen when watching a program.

More handheld electronic devices on the horizon. Besides cellular telephones, handheld electronic devices such as notepad computers are increasing in popularity and sales. Projections say that 30 million units could be sold by the year 2003.

REVERSE 911 lets authorities call citizens. If you're a police officer in a large city and need to evacuate only a few blocks because of a gas leak, it would be very helpful to be able to notify only those particular citizens who lived there and not the entire city via TV and radio. REVERSE 911 is a messaging system that incorporates a phone-number database and a dial-out system that lets authorities call only residents within a specified area. People who answer their phones hear an automated message and instructions on where to go and what to do. An entire neighborhood can therefore be notified in a matter of minutes.

The scanner laws in the United Kingdom are very much different from those in the U.S. Basically you can buy a scanner, but - for the most part - you can't legally use it. The *Wireless Telegraphy Act of 1949* makes it a crime to listen to any radio transmission in the UK on a receive-only radio scanner if you are not (1) the intended recipient or (2) authorized by a designated official to do so. It is also against the law to listen to the transmissions of unlicensed "pirate" radio broadcasters. Any UK citizen may, however, listen to the transmissions of Amateur and Citizens' Band operators.

COMPUTER INFO

Keystroke automation system seeks to keep home computers from

siphoning off readers of printed magazines, books and newspapers. Calling it "GPS for the Internet" new ":Cue:Cat" technology was developed by Digital Convergence of Dallas, Texas. It enables readers to swipe special printed bar codes called ":Cues," using a special scanner called a ":Cat."

When a ":Cue" is scanned, it takes a reader directly to the URL containing specific information for that particular article or advertisement. The home bar-code scanner/Web page finder connects to the keyboard port of your home computer.

Publishers believe it is a revolutionary way to link the printed word with the PC. Forbes has already shipped out over 800 thousand free ":Cat" scanners to subscribers of what it calls the world's "First Internet Enhanced Magazine." Check out: <www.digitalconvergence.com>.

The big question is - will readers be compelled enough by an advertisement or article to get up, go to their computers, and scan the ":Cue" barcode to get additional information?

CNN thinks not. And CNN.com Technology has named the CueCat Reader as one of its "Dumbest Products of 2000." Still millions are being invested to get it going.

The A. T. Cross writing instrument company thinks they have a better way. They have introduced their (\$89.95) "Cross :Convergence" ball pen that uses the same - but a cordless variety - of the ":Cat" scanning technology to store up to 300 URLs for later downloading into your PC. <www.cross.com/cross/home.asp>.

A 64-bit microprocessor built today can easily have more components inside it than a Boeing 747 jet does.

Don't be surprised to see a Microsoft brand Personal Computer down the road. They aren't too happy that the big PC names (like Dell, Compaq, IBM, and Gateway) are straying from their contracts and are now building computers that don't include their Windows operating system.

In view of Microsoft's antitrust problems, computer manufacturers now feel they can now safely deviate from Microsoft's often questionable licensing arrangements. And some of their boxes run the Linux system.

The end result could be Microsoft PC marketing that mimics the "razor blade" distribution model. That is, you price the razor low -- or even give it away -- in or-

der to sell the higher profit margin razor blade and other tie-in products.

Word has it that CEO Bill Gates had a Microsoft "concept prototype" machine in his booth at the recent Consumer Electronic Show. It was not offered for sale and he denied that it would ever be produced. Some observers think it is even possible that Microsoft will develop a special proprietary motherboard and operating system that runs only on their hardware!

How fast is too fast? As microprocessors continue to get faster, engineers are trying to solve another problem looming on the horizon. While a chip can handle 10 GHz, the circuit board it's mounted on may not. Beyond a certain frequency, the dielectric constant of the printed circuit board material breaks down. New materials are being examined for the next generation of PC boards, including ceramic (which doesn't take nearly as much mechanical stress) and Teflon (which remains expensive). High-speed interconnect cables will need to be designed with RF engineering -- with impedance-matching devices in the connector shells.

Voiceprint password. Apple Computer's Mac OS9 operating system software includes a voiceprint password function. A user records his or her voice into the computer through a microphone. That voice is digitally recorded and examined according to its frequency spectrum. Only the same person with that particular voiceprint can gain future access to the computer's internal programs; all other users are locked out from personal files. Rather than take the trouble to remember and key in a particular password, all you have to do is talk to your PC.

Can a computer tell a dirty picture from a clean one? Designed for corporate networks, PORNsweeper is new "image analysis" software that detects and blocks nudie attachments e-mailed to people at work. It simply looks for an abundance of pink pixels in relation to other colors. It even has a "sensitivity" control so you can vary the amount of pink that goes through. A "face detection" feature prevents closeups from being mistaken for pinups.

Watch where you put that circuit board! Just tossing a PC board into the junk box or a drawer may do more harm than good. With circuitry becoming ever-increasingly susceptible to

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electro-static discharge, it pays to protect it with anti-static bags. Gone are the days when a hobbyist could slam a circuit board into a drawer and not think twice about it. Enough electrical charge could be collected on a metal drawer to cause damage to its contents. Some high-end workstations include grounded interior drawer spaces for just such an occurrence, but it still pays to use anti-static bags on circuit boards during even casual storage.

More valuable than diamonds? Ask the average thief what his favorite target is, and he'll likely say a laptop computer. Over a thousand laptops and notebook computers are stolen every day. Airports are favorite haunts for computer thieves. Guard your machine as though it were your checkbook or your wallet.

Computer scanners now include CD recorders. Verbatim's SS600 Storage Scanner is a flatbed color scanner that comes with a built-in CD writer for high-speed reading and storing of documents. A document feeder allows untended operation. Up to 50,000 pages of text can be "burned" onto one CD-ROM, and on-board software allows users to search through a database for a particular document.

Farewell to operating systems? The computer you use 10 years from now may be drastically different from your desktop computer of today. Operating system software (such as "Windows") may be loaded from a high-speed Internet connection, rather than from the PC's hard drive. Individual operating systems may become obsolete as hardware platforms migrate. Everyday computer operations may flat-out require a constant Internet connection.

On-line technical support growing in popularity. Although it may sometimes take longer to get an answer, asking technical questions to a company through e-mail is more apt to get a helpful response. Rather than answer repetitive questions over and over as you get transferred from one person to another over the phone, you have the opportunity to explain a problem in detail only once. Companies like on-line tech support for one main reason: it's cheaper. IBM says they save 70% to 90% over phone representatives and field technicians.

Swapping business cards electronically. Palm computers can exchange data over a wireless link, so it's more convenient to exchange business-card in-

formation with handheld computers than gather a sack full of papers, brochures and cards. One trade show can leave you with either a large bag of documentation to tote home, or a small computer that weighs the same as when you went in.

Programmable fans. The newest cooling fans used in computer systems can have their rotation speeds controlled electronically by the computer itself. Decreasing maximum fan speed by as much as 10% can double the life of the fan. Multi-fan systems can create mechanically resonant beat frequencies, guaranteed to annoy any computer user -- unless the programmable fans are told to spin at different speeds.

Mouse/security guard. Siemens AG has developed a computer mouse that contains a fingerprint sensor. It takes advantage of the normal finger position during ordinary computer mouse use and verifies that the person logging on to the system is the same person whose fingerprint pattern is stored inside the computer.

Computer archiving on the go. Air travelers can archive hard-drive data from their laptop computers at almost two dozen airports. PowerBak, by ManagedStorage International, lets travelers connect to high-speed Internet links inside airports. It costs about a dollar a minute.

INTERNET NEWS

Technology researcher Gartner Group's Dataquest Inc. said **semiconductor chip sales will slacken in 2001 due to weaker PC demand.** Intel Corp. is the market leader there by far. Just as software-giant Microsoft Corp., has moved into "services" (such as Expedia, Carpoint, Microsoft Network, HomeAdvisor, SideWalk, Encarta, Investor, etc.) chip-maker Intel is now moving into consumer hardware devices.

Intel showed a new digital "Pocket-Concert" MP-3 music player at the recent Consumer Electronics Show in Las Vegas. Two other Intel products on the way are "ChatPad", an instant-messaging and e-mail device, and "WebTablet", a book-sized wireless web-surfer.

The World Wide Web is used more for social than commercial purposes. According to a survey taken between Thanksgiving and Christmas,

twice as many online users sent holiday greeting cards and e-mails as made purchases on the Web.

High tech "Call for papers." Advance notices of technical conferences and symposiums almost always include an invitation for presentation of scientific papers on particular topics. For decades, scientists, scholars and engineers have provided paper copies of their works in advance to the conference administrators. Thanks to the Internet, however, more conferences now ask (sometimes it's mandatory) that such papers be submitted via E-mail. It makes things easier on the staff, they receive the work much more quickly, and it's less likely that such valuable works will get lost in the mail.

More "gray panthers" on-line. As the Baby Boomers age, more of them are warming up to computers and embracing what they can do. Seniors (aged 55 and older) will be the fastest-growing segment of the Internet community. By the year 2004, one out of five Americans on-line will be a senior.

More women than men buy cars on-line. Surveys show that women like to arm themselves with information about car-buying so they'll feel more in control and less intimidated during the process, and the Internet is a perfect way to shop for a car anonymously.

Handheld Internet devices are growing in popularity. At least one study predicts that by 2002, more people will be accessing Web sites through handheld computers than from their desktop PC.

Web sites are bonuses for movie fans. Rather than just promote an upcoming film, a website can also provide greater details about the plot, the characters, and behind-the-scenes information. People who see the movie and then surf its Web site often find themselves rewarded with more entertaining content and get more out of the movie-going experience. Alternative endings are but one option available.

Hotels with Web access are catching on! About 10% of business-class hotels in America now offer high-speed Internet connections for their guests. And well over half of the high-end hotel chains are seriously considering adding Internet service by the end of 2001.

More than twice as many people shopped on the Internet this past

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holiday season. According to a *PC Data Online* study, online buying during the 2000 Christmas selling season topped \$10.7 billion ...up over 100 percent from \$5.2 billion in 1999. Satisfaction was high. Over 80 percent of online consumers said they would do it again next year.

Amazon.com was the most popular with 1.6 million daily visits between Thanksgiving and Christmas, a 48 percent increase. Nearly 60 percent (over 34 million) of all Web users visited an online retail site during holiday 2000.

The top gaining retail site was Wal-Mart.com. They went from 50 thousand to 370 thousand weekly visitors - a gain of 640 percent. (*PC Data and Media Metrix*)

Orbitz is a new user-friendly travel search site founded by the five largest US airlines. American, Continental, Delta, Northwest and United Airlines have poured \$50 million into the launch of <www.orbitz.com>. Right now, it provides actual flights and fares, but will not start selling tickets until this summer. Results are ranked with the lowest fares first. (We tried it, and like it!)

But it has caught the eye of various State Attorneys General who are concerned about collusion and price fixing. Supposedly, more than 30 U.S. airlines are participating in the system. It aims to search every available flight combination for travelers, giving them the choice of cut-rate fares, fewest legs on a trip and most convenient departure times.

The January issue of *Travel & Leisure* magazine said Orbitz "...is expected to reinvent the online fare-finding wheel when it launches in June." We shall see...

WASHINGTON WHISPERS

A panel of E-Commerce professionals considering online fraud and scams said increased protection is needed to protect the public. The "Consumers and the Web" forum called for "...mandatory federal standards and global governance" because the Internet is worldwide in scope.

A recent *Harris Interactive* poll reported that 5 percent of all Americans said they were somehow "defrauded" on the Internet last year.

According to the Federal Trade Commission, auction sites are particularly a problem area. The FTC said the number of Internet-auction fraud complaints has

skyrocketed from approximately 100 in 1997 to over 10,000 in 1999.

Paper ballots, punch cards and electro-mechanical voting systems are on the way out. Technology from Unisys, Microsoft software, and hardware from Dell Computer Corp. are being combined to create a new U.S. electronic voting system.

Blue Bell, PA, based Unisys, which has already developed an electronic voting system for Brazil, the city of Rome and Costa Rica, said "...the new system would process voter registration, identify voters at polling places, and process and accurately count votes."

Unisys said its "e-@ction Election Solutions" program will be ready in time for the 2004 presidential election.

The system in Costa Rica uses "biometric" voter ID cards that contain digitized representations of voters' fingerprints. Similar to American drivers' licenses, the voter ID cards in Costa Rica are universally used as identification for just about everything.

Unlike most countries, the United States has no national election system or even uniform statewide procedures. Instead, each of the 3,137 counties in the United States is responsible for its own voting method. Neighboring counties in the same state can have vastly different systems.

AMATEUR RADIO

FCC Amateur Radio Enforcement:

Col. Eugene Walker of the Virgin Islands Territorial Emergency Management Agency has been questioned about the KV4JVC repeater operating on 146.91 MHz. The licensee of KV4JVC says he has not been associated with that repeater for over a year. Walker has been asked to shut the repeater down or to change the identifying call sign.

James R. Vining N5RLX (Conroe, TX) has been ordered to retake his Extra Class license examination (5 wpm code and the Element 4 theory.)

Elaine C. Kam AH6QQ (Honolulu, HI) has been ordered to retake the 5-wpm Morse code test (Element 1).

Jonathan A. Romero KC2AGX (Bronx, NY) has been ordered to retake his Technician Class license examination (Element 2.)

Brent L. Stroud K9WV (Marion, IL) has been asked to explain the accusation that he may be improperly using the frequency 154.600 MHz for business purposes related to Heartland Communications.

Carl G. Paoletti KB9WLF (Keyesport, IL) has been warned that the FCC has information that he deliberately interfered with ongoing communications on 14.302.5 MHz by operating near an operating network frequency. "The operation also included verbal attacks on net members." The FCC said further interference will result in enforcement action.

The FCC said it has received complaints that **Richard H. Knox KC5UOW (Jacksonville, AR)** and **Michael T. Gruttadavria KC8NMW (Willoughby, OH)** have "been operating on CB frequencies playing music, transmitting sound effects, keying on top of ...and otherwise deliberately interfering with ongoing communications." Further such operation will lead to monetary fines, equipment seizure and will jeopardize their Amateur Radio license, FCC said..

Jacob T. Johnson KC0FPN (Essex, IA) again has been questioned by the FCC about a date on a CSCE (exam credit certificate) that appears to have been altered so that it would fall within the required 365 day time limit.

Lorenzo Eady KG4IHK (Myrtle Beach, SC) has also been contacted about an altered CSCE. It appears that his CSCE for Element 3 (General Class theory test) has been changed to include that he also passed Element 1 (5 wpm) code. A check of the prior exam session shows he did not. He must submit an explanation within 20 days to the FCC.

Beryl Foster (Avalon, CA) has been notified by the FCC that it has evidence that he has operated on the Amateur two-meter band from his car at Laughlin, NV on Nov. 11, 2000. Further such unlicensed operation will result in a fine or imprisonment and subject his radio transmitting equipment to seizure.

Victor Figuerosa WP4LAB (Caguas, PR) had his Tech Plus license cancelled after failing FCC ordered retesting.

The Bistro, a Las Vegas, NV business has been warned that further unlicensed operation on 440-MHz will result in a fine which could range from \$7,500 to \$10,000.

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Amateur Radio Operator Census by State (Dec. 31, 2000) - Number of Stations per 1,000 Population

State and Postal Code	Population 2000 Census	Stns. Per 1,000	Extra Class	Advanced Class	General Class	Tech Plus Class	Technician Class	Novice Class	Grand Total
AK - Alaska	626,932	5.09	424	396	620	404	1,172	177	3193
AL - Alabama	4,447,100	2.37	1,545	1,316	2,001	1,428	3,829	413	10532
AR - Arkansas	2,673,400	2.59	991	832	1,198	931	2,655	310	6917
AZ - Arizona	5,130,632	3.05	2,131	2,111	2,974	2,167	5,626	630	15639
CA - California	33,871,648	3.03	10,996	11,752	16,487	15,166	40,330	7,964	102695
CO - Colorado	4,310,261	2.81	1,787	1,651	2,317	1,761	3,995	611	12122
CT - Connecticut	3,405,565	2.44	1,326	1,147	1,858	1,240	1,983	745	8299
DC - Dist. of Columbia	572,059	0.72	66	78	105	46	86	30	411
DE - Delaware	783,600	1.75	231	182	312	212	354	82	1373
FL - Florida	15,982,378	2.49	5,559	6,322	9,519	5,680	9,624	3,156	39860
GA - Georgia	8,186,453	1.77	2,094	2,067	2,893	2,146	4,613	712	14525
GU - Guam	156,974	3.29	60	41	56	88	254	18	517
HI - Hawaii	1,211,537	2.73	479	389	561	491	1,138	251	3309
IA - Iowa	2,926,324	2.22	965	1,085	1,462	817	1,724	453	6506
ID - Idaho	1,293,953	3.37	547	460	815	593	1,772	171	4358
IL - Illinois	12,419,293	1.83	3,297	3,065	4,793	3,306	6,599	1,629	22689
IN - Indiana	6,080,485	2.45	1,965	1,855	3,075	2,314	4,721	944	14874
KS - Kansas	2,688,418	2.70	945	866	1,581	1,062	2,304	498	7256
KY - Kentucky	4,041,769	2.18	1,185	975	1,610	1,301	3,177	548	8796
LA - Louisiana	4,468,976	1.52	1,004	1,026	1,351	970	2,046	391	6788
MA - Massachusetts	6,349,097	2.27	2,406	2,003	3,100	2,239	3,545	1,130	14423
MD - Maryland	5,296,486	2.11	1,878	1,666	2,271	1,669	2,937	747	11168
ME - Maine	1,274,923	3.45	660	545	1,017	643	1,255	284	4404
MI - Michigan	9,938,444	2.12	3,007	2,708	4,462	3,061	6,638	1,197	21073
MN - Minnesota	4,919,479	2.16	1,618	1,493	2,370	1,465	3,109	589	10644
MO - Missouri	5,595,211	2.27	1,837	1,709	2,696	1,724	4,021	711	12698
MS - Mississippi	2,844,658	1.64	669	657	912	601	1,624	215	4678
MT - Montana	902,195	3.42	436	370	629	379	1,098	173	3085
NC - North Carolina	8,049,313	2.30	2,655	2,424	3,509	2,649	6,009	1,241	18487
ND - North Dakota	642,200	2.42	213	170	357	238	488	87	1553
NE - Nebraska	1,711,263	2.28	547	565	972	568	1,014	228	3894
NH - New Hampshire	1,235,786	3.99	853	594	1,013	746	1,429	295	4930
NJ - New Jersey	8,414,350	1.87	2,504	2,338	3,346	2,526	3,662	1,343	15719
NM - New Mexico	1,819,046	2.95	783	729	968	635	2,074	173	5362
NV - Nevada	1,998,257	2.34	633	603	1,020	611	1,620	197	4684
NY - New York	18,976,457	1.71	4,493	4,234	6,659	4,948	9,027	3,083	32444
OH - Ohio	11,353,140	2.66	4,152	3,670	6,011	5,121	9,274	1,938	30166
OK - Oklahoma	3,450,654	2.65	1,240	1,136	1,567	1,270	3,481	455	9149
OR - Oregon	3,421,399	3.82	1,700	1,696	2,898	1,882	4,149	737	13062
PA - Pennsylvania	12,281,054	1.98	3,837	3,428	5,353	3,719	6,268	1,670	24275
PR - Puerto Rico	3,808,610	1.68	352	496	825	1,674	1,130	1,939	6416
RI - Rhode Island	1,048,319	2.23	387	271	519	441	519	201	2338
SC - South Carolina	4,012,012	1.70	1,028	882	1,531	950	2,084	341	6816
SD - South Dakota	754,844	2.08	248	250	372	177	418	103	1568
TN - Tennessee	5,689,283	2.45	2,039	1,869	2,657	2,172	4,512	664	13913
TX - Texas	20,851,820	2.00	6,274	5,973	8,018	5,774	13,765	1,895	41699
UT - Utah	2,233,169	3.89	752	644	991	1,265	4,751	282	8685
VA - Virginia	7,078,515	2.39	2,724	2,394	3,372	2,495	4,958	985	16928
VI - U.S. Virgin Islands	97,120	3.12	50	29	79	32	92	21	303
VT - Vermont	608,827	3.66	345	246	434	307	788	107	2227
WA - Washington	5,894,121	4.08	3,118	2,959	4,706	3,688	8,240	1,316	24027
WI - Wisconsin	5,363,675	1.97	1,535	1,434	2,272	1,380	3,371	569	10561
WV - West Virginia	1,808,344	3.55	772	599	1,074	892	2,764	320	6421
WY - Wyoming	493,782	3.23	229	194	304	214	575	81	1597
Other - (See Note)	113,865	9.93	180	85	146	134	532	54	1131
	285,607,475	2.39	93751	88679	134018	100412	219223	45104	681187
Difference between Dec. 31, 1999 & Dec. 31, 2000									
		+19,129	--14,757	+22,759	--34,009	+27,136	--11,904	+8,354	

Other = Includes APO (AA, AE, AP), American Samoa, N. Mariana Island addresses. Year-2000 (Population) Census released by U.S. Dept. of Commerce on December 28, 2000.

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MICROSOFT ENTERS THE HARDWARE BUSINESS

The International Consumer Electronics Show (CES) got off to a fast start at the Las Vegas Convention Center on Saturday, January 6 when Microsoft took the wraps off of its widely-anticipated Xbox video system.

Due out this fall, the gaming console will compete with Sony Corp., Nintendo and Sega in the \$20 billion-a-year video game market. Microsoft has a lot of catching up to do. Sony already has sold more than 75 million of its PlayStation machines worldwide. And more than 25 percent of all U.S. households now have one.

The Xbox launch is a major event for Microsoft because it is their first foray into computer hardware. Several years in development, the sleek black machine is targeted at astute video game players in the 15-to-26-year-old bracket.

With 64 megabytes of memory, an Intel 733-meg chip, an 8-gig hard drive and sophisticated "movie-quality" graphics, the Xbox is more powerful than its competition. It features a port allowing users to update the machine directly from the Internet and is compatible with HDTV (high definition digital) television and broadband (high-speed) connections. Doubling as a home entertainment system, the Xbox can also play DVDs.

It even has a vibrating "rumble" feature that shakes the controller to add game action. Microsoft took extra pains in putting the system together to make it easy for software writers to exploit features and write programs.

But, so far, Microsoft has not said what it will cost leading CES convention goers to suspect that it will not be cheap! The price gets announced in May at a video game convention. The October rollout will be supported by a massive half billion dollar ad campaign - something that few companies (other than Microsoft) could afford.

The Xbox connects to the Internet to enable worldwide game-playing with other players -- something that Sony Corp.'s PlayStation 2 cannot do without expensive add-on items. Forrester Research forecasts that there will be 18 million Web gamers this year with fees charged for playing the games online exceeding \$1.6 billion.

Microsoft also showed a clock radio device at CES that runs on "calendar information." It plays weather, traffic, news and music from the Web through a wireless connection to a PC. Also previewed was a new compact flash memory disc loaded with compressed music, a personal digital assistant that uses voice recognition, prototypes of various Pocket PC-powered gadgets and "Whistler", the much ballyhooed next-generation 'Windows' consumer operating system.

The firm believes that the PC (which is never turned off) will eventually be the "heart" of the networked household and that "Microsoft software will be the "glue" that binds it all together."

THE MYSTERIOUS SECRET INVENTION, WHAT IS "IT"

Code-named "Ginger," the mysterious "IT" machine hit the national news headlines on Friday, January 12. "Its" inventor is 49-year old Dean Kamen, a scientist who was recently awarded the National Medal of Technology, the nation's highest technology award, for his invention of the insulin pump. For more than two decades, Kamen has been creating innovative technology products at DEKA Research and Development Corp., a secretive Manchester, NH company with more than 150 employees. On the Web see: <<http://www.dekaresearch.com>>

He lives in a futuristic hexagonally-shaped mansion on a hilltop outside Manchester, N.H., which he designed. According to ABC News, his visitors have included such notables as President-elect George W. Bush. Kamen's prior inventions are primarily healthcare devices that give people more freedom of movement.

"It" came to light when the Harvard Business School Press paid \$250,000 for the rights to a book about the invention that even they do not know about. Harvard Press declined to say when the book is coming out which will be written by noted free-lance journalist Steve Kemper.

The first printed word about "It" came online at the Inside.com website. They said the invention will "take just 10 minutes to assemble using simple tools, ...may cost less than \$2,000 ...and will "debut in 2002."

People who have seen "It" say "...It' will be as significant as the personal computer, that "It" will sweep over the world and change lives, cities, and ways of thinking." Dean Kamen said "It" will be an alternative to products that "...are dirty, expensive, sometimes dangerous and often frustrating, especially for people in the cities." "It" is not a medical device.

Other ideas are that it could be "a frictionless skateboard (employing magnetic levitation), a cheap, clean, curb-hopping, pothole-skipping scooter, some sort of anti-gravity hovercraft, a miniature personal helicopter or a personal "jet-pack" flying belt.

A search of the Internet, however, may have uncovered "It." "It" (which one person said stands for Individual Transporter) is a transportation device, a revolutionary electric scooter that uses Kamen's iBOT technology to balance on one or two wheels. The patent registration for "IT" can be found online at <<http://www.delphion.com/cgi-bin/viewpat.cmd/WO00075001A1>>. The Website shows abstract drawings of the vehicle, including one that rolls on a ball (like an upside-down trackball). It may use some sort of gyroscope technology to keep it upright. Venture capitalist John Doerr reportedly has invested millions of dollars into the concept.

Another story reported that "Investment bank Credit Suisse First Boston expects that 'IT' can generate more in its first year than any start-up ever, which would make Kamen richer than Bill Gates within five years...."